

REMARKS

Claims 1-22 are currently pending. Claim 22 is amended. No new matter is presented. In view of the above amendments and the following remarks, Applicants respectfully request the consideration and allowance of claims 1-22.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being unclear. Specifically, the Examiner indicates that the expression "MP2" lacks antecedent basis. Claim 22 is amended to more clearly recite the features of the claims invention. Accordingly, Applicants request the withdrawal of the rejection of claim 22 under 35 U.S.C. 112.

Claims 1-5, 8-13, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Giebeler et al. (U.S. Patent Publication 20020176801). Applicants respectfully traverse this rejection.

Giebeler is directed to an integrated fluid delivery and analysis system and components for preparing and/or analyzing samples. More specifically, Giebeler discloses fluidics modules, an analysis module, and a transport module.

It is respectfully submitted that Giebeler fails to teach or suggest a CCD camera being oriented by the optical system to a large-area rectangular region of the underside of the microplate across from the dispensing unit, the surface in one dimension being adapted to the longitudinal dimension of the dispensing comb and in the other dimension to the area of the microplate covered by the displacement of the dispensing comb, so that the elapsed time for the luminescence is measurable simultaneous with the ongoing dispensing in each of the columns of wells of the microplate in which dispensing is carried out successively.

The claimed invention provides a measurement unit that is used to observe a large-area rectangular region of the microplate so that the course of luminescence signal of each well is measured while the dispensing of wells goes on column by column. There is no synchronization needed between the dispensing and analyzing processes. In contrast, Giebeler only observes at best on column per time by using separate photomultipliers for each single well, starting the observation after dispensing fluid in the watched column of wells, and then observing the change by measuring the maximum luminescence signal in relation to the basic signal before the dispensation. The claimed invention, however, provides an analysis of luminescence light over time without any limitation to the dispense velocity and/or repetition rate of adding the same or different reactants.

Thus, the claimed invention provides an advantage when there is a need to observe fast light emitting reactants of a reactant added to the sample material or when reactions of

different fluids applied to the wells have to be measured time-resolved as a reaction intensity profile. As a result, all reactions of the dispensed wells will be observed simultaneously and time resolved without any drop outs and without any mechanical movement of the detector array.

In contrast, Giebeler discloses a time tagging method defined as a processor correlated method of controlling both processes, ignition and measurement processes and organizes so that in that a time delayed dispensation of reactants into different sample wells is controlled in a time scheme. In other words, the ignition events of each of the wells are tagged to the time line and then after a sample dependent development process, the same time scheme is applied to the same wells for measuring the light values emitted by fluorescence, luminescence or by transmitted light.

It is respectfully submitted that Giebeler does not disclose a light source with optics to direct light to the sample holder because the luminescence light emission from a reaction of the sample with one or more reactants is measured only. These measurements are not done well by well in a fixed time delay to the ignition event (addition of reactant). A second difference of the Giebeler approach in contrast to the claimed invention is that Giebeler teaches to have, at first, the ignition event and then a movement to the analysis module (See Figs. 2A, 2B, 4, and 5).

There are also clear differences in defining the scheme of optical reading-out the light emission of the samples and in the structure of the exchange system (renamed 'table system' by the Examiner). While Giebeler discloses several modes of detection (e.g. from the upper and the bottom side of the microplate, also using spectral filters, complicated time tagging system after clocked ignition events etc.), in contrast, the invention comprises an imaging unit (camera block) under the bottom side of the multiple sample carrier (microplate) that images a plurality of the wells of the microplate while the dispensation occurs on the upper side of the microplate within the field of view of the camera block. Thus, the light emission process according to the invention is observed completely over time (without any gaps of measurements as taught by Giebeler) and completely independent of the start positions, progress velocity, and repetition rate etc. of ignition events (dispensation of reactants).

It is also submitted that the dispense system of the claimed invention is not comparable to the 'compact...pipettor head' of Giebeler, because the Giebeler does not teach or suggest the 'symmetric structure' of the dispensing comb according to the claimed invention. In other words, Giebeler does not provide a dispensing unit having at least one linear dispensing comb having a symmetric treelike structure (See Figs. 1-3 and 7). In

addition, the 'plate-to-plate pipettor system' (as mention in paragraph [0046] of Giebeler) that picks fluid values up from a test plate or the like to transfer the reactants to the sample plate is not same as the dispense system provided in the claimed invention.

Furthermore, Giebeler does not teach that the two or more rows or columns are used for different reactants to add them one after the other to the samples of the microplate. Thus, Giebeler does not teach or suggest that the elapsed time for the luminescence is measurable simultaneous with the ongoing dispensing in each of the columns of wells of the microplate in which dispensing is carried out successively.

It should be noted that the Examiner indicates that the CCD of the claimed invention is disclosed in paragraph [0247] of Giebeler. Paragraph [0247] discloses a "suitable CCD (rectangular or square, cooled to a satiable temperature to ensure adequate signal to background ration)". However, it is respectfully submitted that this paragraph of Giebeler is not the same as the CCD of the claimed invention. Specifically, Giebeler utilizes intensive light sources (flash lamps, arc lamps or a laser), secondly, a defined number of optical fibers and optical heads are applied to couple each single sample well to one detector element. Thus, Giebeler does not teach or suggest imaging entire rectangular areas (at best the whole microplate) by an imaging objective of a (CCD) camera block. Although Giebeler discloses a CCD, Giebeler does not teach or suggest imaging an entire rectangular area as recited in the claimed invention.

With respect to the cited paragraph [0049] the Examiner states that "although the pumps are not disclosed explicitly, the automatic operation of the apparatus of Giebeler would not be possible without such pumps...". However, since the system of Giebeler is described as a plate-to-plate pipettor (see for explanation paragraph [0065] of Giebeler) there is no need for pumps according to the invention (because the fluid is transported from a reservoir to the dispenser comb and ejected). The Giebeler approach can properly work with magnetic controlled membranes, piezoelectric elements, or pulsed valves etc. that change the air or fluid volume within the pipette tips to suck and eject such minimum values of fluid as disclosed to be a few microliters (e.g. 2 μ L). Thus, it would be possible to operate the apparatus of Giebeler without such pumps. Accordingly, it is respectfully submitted that the cited reference fails to teach or suggest the feature of a controllable pump for metering the amount of liquid to be dispensed without immersion in wells of the microplate.

In view of the above distinctions, Applicants respectfully submit that Giebeler fails to teach or suggest all the features recited in claim 1. Therefore, Applicants request the withdrawal of the rejection of claim 1 under 35 U.S.C. 102(e).

Claims 2-5, 8-13, 19 and 20 are dependent upon claim 1. Therefore, it is respectfully submitted these claims recite patentable subject matter for at least the reasons mentioned above. Accordingly, Applicants request the withdrawal of the rejection of claims 2-5, 8-13, 19, and 20 under 35 U.S.C. 102(e).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler et al. (U.S. Patent Publication 20020176801) in view of Marouiss et al. (US Patent Publication 20010048899). Applicants respectfully traverse the rejection of claim 6.

Claim 6 is dependent upon claim 1. Therefore, it is submitted that for at least the reasons mentioned above, claim 6 recites subject matter that is neither taught nor suggested by the applied references.

In addition, it is submitted that the pump system of Marouiss does not merely disclose a one-to-one assignment of pumps to nozzles. Thus, Marouiss fails to cure all the deficiencies of Giebeler, therefore, Applicants request the favorable consideration of claim 6 under 35 U.S.C. 103(a).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler et al in view of Schick (U.S. Patent Publication 20030230521). The Examiner takes the position that the combination of Giebeler and Schick teach or suggest all the features recited in claim 7. Applicants respectfully disagree.

Schick discloses a waste trough in connection with a wash and/or equilibration buffer bag due to the use of tubing apparatus that is provided for sucking fluids. That is different from the intention of the invention to have the waste trough only if applying different fluids and to eject a first fluid out of the pipes and nozzles downstream after the valve switched for applying a second fluid. In addition, Schick fails to cure all the deficiencies of Giebeler, therefore, Applicants request the withdrawal of the rejection of claim 7 under 3 U.S.C. 103(a) for at least the reasons mentioned above.

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler in view of Sekiya et al. (U.S. Patent No. 5,828,498), and further in view of Gerdt (U.S. Patent No. 6, 731, 845). Applicants traverse the rejection of claims 14-16.

It is respectfully submitted that Sekiya and Gerdt fail to cure all the deficiencies of Giebeler. Claims 14-16 are dependent upon claim 1, therefore, for at least the reasons mentioned above, it is submitted that claims 14-16 recite patentable subject matter. Accordingly, Applicants request the withdrawal of the rejection of claims 14-16.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler in view of Sekiya et al. (U.S. Patent No. 5,828,498), Gerdt (U.S. Patent No. 6, 731,

845) and Phillips et al. (U.S. Patent No. 6,584,052). Applicants respectfully traverse the rejection of claims 17 and 18.

Claims 17 and 18 are dependent upon claim 1. It is respectfully submitted that the cited references fail to teach or suggest all the features of the claimed invention. More specifically, since claims 17 and 18 are dependent upon claim 1, it is submitted that claims 17 and 18 recite patentable subject matter for at least the reasons mentioned above. Accordingly, Applicants request the withdrawal of the rejection of claims 17 and 18 under 35 U.S.C. 103(a).

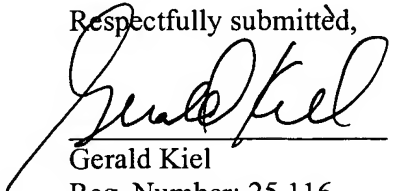
Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler in view of Wohlstadter et al. (U.S. Patent Publication 20040022677). The Examiner takes the position that the combination of Giebeler and Wohlstadter teach or suggest all the features recited in claims 21 and 22. Applicants respectfully disagree.

It is submitted that Wohlstadter fails to cure all the deficiencies of Giebeler. Thus, it is further submitted that the cited references fail to teach all the recited features of claims 21 and 22 for at least the reasons discussed above. Accordingly, Applicants request the withdrawal of the rejection of claims 21 and 22 under 35 U.S.C. 103(a).

In view of the above amendments and remarks, Applicants request the reconsideration and allowance of the present application. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

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